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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/624,338

07/22/2003

Clayton M. Grondahl

GRON-0002

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EXAMINER

REESE, DAVID C

ART UNIT

PAPER NUMBER

3677

NOTIFICATION DATE

DELIVERY MODE

07/29/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTOCommunications@hwdpatents.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/624,338	<b>Applicant(s)</b> GRONDAHL, CLAYTON M.	
	<b>Examiner</b> David C. Reese	<b>Art Unit</b> 3677	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-9, 11-13, 15, 16, 18-21 and 23-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-9, 11-13, 15-16, 18-21, and 23-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/27/2008 has been entered. Consequently, the following is the current listing of claims in the instant application:

### ***Status of Claims***

- Claims 5, 10, 14, 17, and 22 were canceled.
- Claims 1, 8-9, 11, 24, and 26 were amended.
- Claims 25 are withdrawn.
- Claims 1-4, 6-9, 11-13, 15-16, 18-21, and 23-26 are pending.

### ***Claim Rejections - 35 USC § 103***

[1] The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

[2] Claims 1, 3-4, 8-9, 11-13, 15-17, 19, 21, and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gail et al ("Gail", U.S. Patent No. 5,975,535) in view of Webster et al ("Webster", U.S. Patent No. 6,220,602).

Although the invention is not identically disclosed or described as set forth 35 U.S.C. 102, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a designer having ordinary skill in the art to which said subject matter pertains, the invention is not patentable.

With respect to claims 1, 9, 19, and 24, Gail discloses of a seal assembly (see figure below) comprising:

- a non-rotating member (10, or 2 from fig. 1);

- a brush seal (1) adjacent the non-rotating member (10), the brush seal including a plurality of staggered seal members, each brush seal member including:

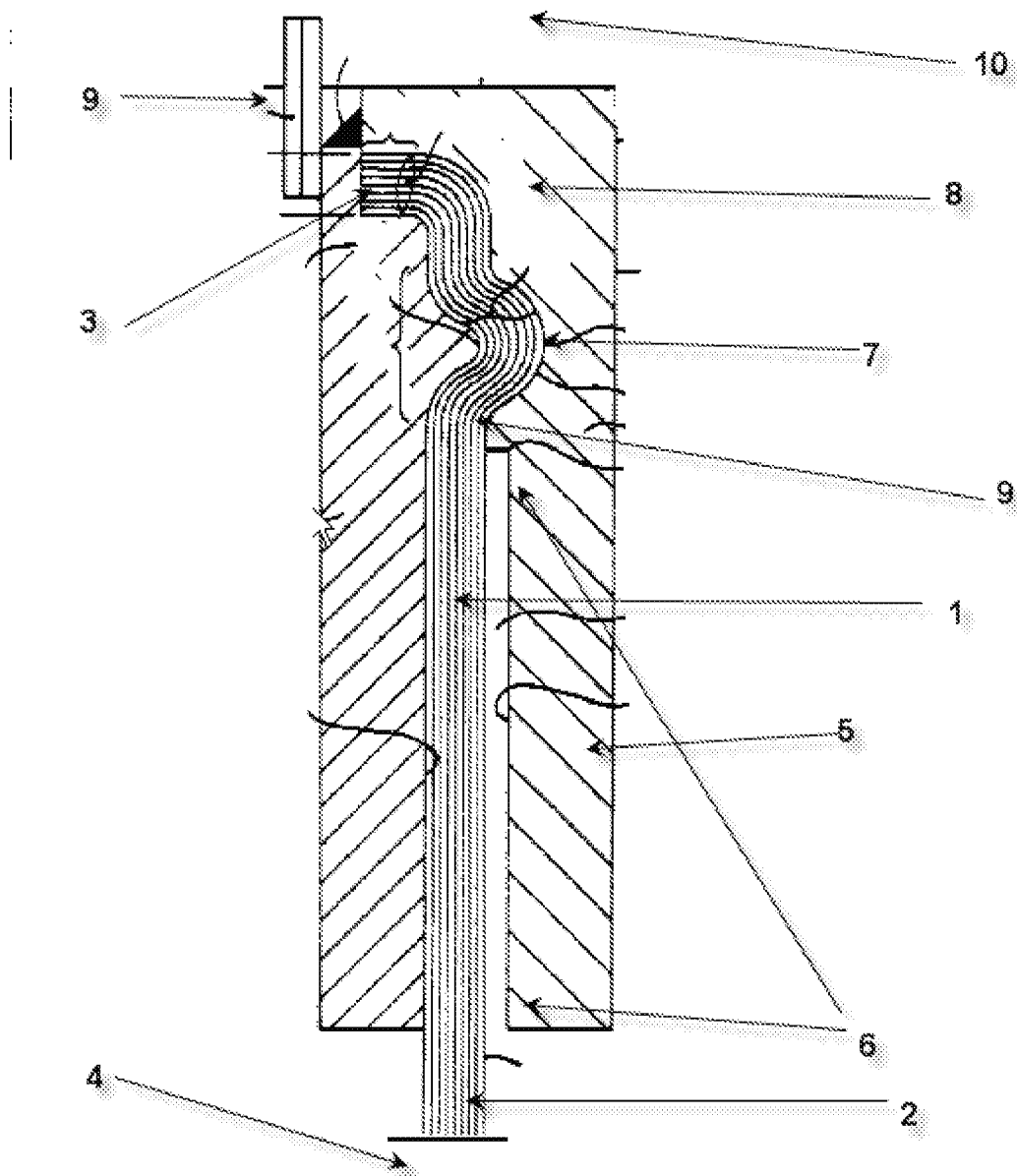
  - a free portion (2) [*adapted to be* angled relative to both a radial axis of the non-rotating member and an axis perpendicular to a radial axis of the non-rotating member (10)]\*; and

  - a fixed portion (3) that is angled relative to free portion (2) and adapted to be one of substantially parallel (at 3) to and substantially perpendicular to the radial axis of the non-rotating member; and

- a support (5) coupled to a low pressure side of the seal for supporting the free portion (2), the support (5) having a support portion facing a high pressure side of the seal,

wherein the free portion (2) contacts a distal end (6) in an pressurized operative state (\*) and is out of contact with the distal end (6) in an unpressurized inoperative state, the fixed portion (3) of the seal is angled relative to the free portion (2) in both the operative and inoperative states, and the free portion (2) [*is adapted to be* further angled relative to the fixed portion during the pressurized operative state than in the unpressurized inoperative state]\*.

\*Examiner's note: the above statements in brackets incorporating "adapted to" language fail to further limit the structure of the claimed invention. In the instant case, the prior art must only be capable of performing said intended use or functional language to be properly applied to the claim. More specifically, the free portion of Gail can indeed be considered as capable of being angled relative to both a radial axis of the non-rotating member and an axis perpendicular to a radial axis of the non-rotating member (as well as further angled relative to the fixed portion) due to the varying degrees of angles that will accompany the free portion during the transition from an unpressurized, inoperative state to that of a pressurized operative state (especially since the claim does not even require a component now). It has been held that the recitation that an element is "adapted to" perform a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138.



Gail discloses the seal to be brush seal, not a leaf seal as claimed.

Webster teaches a seal arrangement where either a brush seal or leaf seal may be used (column 7, lines 44, 45), thereby establishing the seals as equivalent. It would have been

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obvious to one having ordinary skill in the art at the time of the invention to use either a brush seal or leaf seal, as Webster teaches these seals to be equivalent and interchangeable.

Re: Claim 3, wherein the support portion (5) includes a curved surface (7) extending from a proximate end (8) of the support portion (5) to the distal end (6), and the free portion (2) extends tangentially (9) from the curved surface in the operative state.

Re: Claim 4, wherein the proximate end (8) is coupled to a mount portion (9) of the support that mounts the support (5) to a stationary component.

Re: Claim 8, wherein the fixed portion (3) is positioned substantially parallel to the radial axis of the non-rotating member (10), and the free portion (2) is angled out-of-plane relative to the fixed portion (3).

Re: Claim 11, wherein the distal end (6) of the support (5) portion is thinner than a proximate end (8) of the support portion, and the proximate end (8) is in contact with the free portion in the unpressurized state (at 9).

Re: Claim 12, wherein the support portion (5) includes a curved surface (7) extending from a proximate end (8) to the distal end (6).

Re: Claim 13, wherein the proximate end (8) is coupled to a mount portion (9) of the support that mounts the support (5) to a stationary component.

Re: Claim 15, further comprising a holder for mounting the seal assembly to a stationary component, wherein the holder includes a projection for protecting the free portion (see area below and around 8 in the figure above).

Re: Claims 16 and 17, the combination of Gail and Webster teaches the fixed portion (6) to be provided by an arcuate member in each leaf seal member. Examiner notes that because the

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seal extends around a rotary shaft, it is essentially circular, which will include arced portions.

Gail shows the free end portion to be circumferentially parallel to a surface of the rotatable component.

Re: Claim 21, wherein the support portion (5) includes a curved surface (7) extending from a proximate end (8) to the distal end (6).

Re: Claim 23, wherein the fixed portion (3) is positioned substantially perpendicular to a longitudinal axis of a component (4) to be sealed, and the free portion (2) is angled out-of-plane relative to the fixed portion (3).

[3] Claims 2, 18, 20, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gail in view of Webster as applied to claims above, and further in view of Halowach et al (“Halowach”, U.S. Patent No. 4,813,608). Gail and Webster fail to disclose the leaf seal layers to be made from different materials, where a first material addresses a high pressure side of the seal and a second material addresses a low pressure side of the seal, where the material has a lower coefficient of thermal expansion than the second material.

Halowach discloses a leaf seal assembly (40) comprising two layers of different material with different coefficients of thermal expansion. The two layers are bonded together, such that the different rate of expansion between the two layers causes the seal to bend in a preferred direction, which results in the formation of a tight air seal between adjoining structures (column 2, lines 13-24). It would have been obvious to one having ordinary skill in the art at the time of the invention to modify Gail and Webster as taught by Halowach, such that the layers are made of materials with different coefficients of thermal expansion, so that the differing rates of expansion causes the seal to bend, forming a tight air seal between the structures. .



[4] Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gail in view of Webster as applied to claim 1 above, and further in view of Mackay et al (“Mackay”, U.S. Patent No. 5,042,823). Gail and Webster fail to disclose the plurality of staggered leaf seal members (3, 4) to be provided by a single strip of material.

Mackay teaches a leaf seal arrangement (54) made from single strip of material. Manufacturing a multi-layered seal from a single strip of material lowers manufacturing costs because the seal can then be assembled in a simpler fashion, as opposed to cutting two different layers to length and connecting the layers together to form the seal. It would have been obvious to one having ordinary skill in the art at the time of the invention to modify Gail and Webster as taught by Mackay, such that the seal is made from a single strip of material, in order to reduce manufacturing costs. Mackay further discloses the leaf seal members to be fixed by a weld.

#### ***Response to Arguments***

[5] Applicant's amendments and arguments filed 3/27/2008 regarding rejections under 35 U.S.C. 103 have been fully considered but they are not persuasive. The examiner maintains that the prior art of Gail in view of Webster et al. remains obvious in view of the instant claim listing. As articulated above, the use of the adapted to language has failed to further limit the structure of the claimed invention. In the instant case, the prior art must only be capable of performing said intended use or functional language to be properly applied to the claim. More specifically, the free portion of Gail can indeed be considered as capable of being angled relative to both a radial axis of the non-rotating member and an axis perpendicular to a radial axis of the non-rotating member (as well as further angled relative to the fixed portion) due to the varying degrees of angles that will accompany the free portion during the transition from an unpressurized,

inoperative state to that of a pressurized operative state (especially since the claim does not even require a component now). It has been held that the recitation that an element is “adapted to” perform a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138.

Further, in applicant’s remarks, the applicant has provided no discussion as to how the prior art as articulated in the rejection above is no longer applicable towards the amended subject matter as incorporated into the independent claims. All that is stated is that the amended claims refer to a radial axis of a non-rotating member and, therefore, the applicant asserts, that the claims possessing said language are allowable. 37 CFR 1.111(b) states, “A general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references does not comply with the requirements of this section.” Applicant has failed to specifically point out how language of the claims patentably distinguishes them from the references.

Though it was articulated previously by the examiner that attempting to describe the relationship of the angle between the seal and the support as opposed to that between the seal and the component (since the component was not positively brought into the scope of the instant claim) may be a better option in properly differentiating the claimed subject matter from that of the prior art of record; said relationship (between the seal/support, especially when using adapted to language) may be better suited when the claim requires at least some form of a component (albeit not a positively claimed one). That is, the applicant may want to consider bringing back into the scope of the claim the requirement of a component to be sealed against, and/or incorporate more structural requirements instead of multiple “adapted to” phraseology.

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***Conclusion***

**[6] THIS ACTION IS NON-FINAL**

[7] Any inquiry concerning this communication or earlier communications from the examiner should be directed to David C. Reese whose telephone number is (571) 272-7082. The examiner can normally be reached on 7:30 am-6:00 pm Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Victor Batson can be reached at (571) 272-6987. The fax number for the organization where this application or proceeding is assigned is the following: (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David Reese

/D. C. R./

Examiner, Art Unit 3677

/Robert J. Sandy/

Primary Examiner, Art Unit 3677